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relation do these ontogenic changes bear to the stirp. It is demonstrated that characters of this class finally become hereditary, because we ultimately find them in the organism at a stage preceding either exposure to external conditions, use or exercise. It would appear extremely difficult to determine whether this inheritance is due to Lamarck's principle or to the gradual selection of congenital predispositions. In the latter case we have a valid explanation of orthogenic, determinate or definite variation, so far as a very large class of characters are concerned, for it is obvious that ontogenic evolution works on all individuals practically alike. It gives a definite trend to evolution and it does away with the selection of fortuitous variations. This, however, is not a complete explanation of definite variation, because we find the same definite principle operating in the evolution of the teeth, which are not, so far as we know, subject to ontogenic variation. The only explanation which we can offer of definite variation in the teeth is that all animals which arise from a similar stem form seem to have their new characters constitutionally predetermined. Thus each new character will arise at a certain point, and in nearly the same order in all animals which are derived from a similar stem. Thus we may say that adaptive evolution is not confined to organs in which individual reaction or ontogenic evolution is operative."*

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* Prof. Morgan has proposed the term 'Modification' for the change here defined as 'Ontogenetic Variation.' The term 'Phylogenetic Variation' was first used by Nägeli; it is equivalent to the term 'Mutation' as employed by Wagner and Scott. Prof. Baldwin, in April, 1895, proposed the term 'Organic Selection' for the processes of ontogenic evolution substantially similar to those here described. As pointed out by Prof. Morgan in last week's SCIENCE, this principle was also clearly stated in Weismann's Romanes' Lecture. These matters will be discussed in a later number of SCIENCE.

CURRENT NOTES ON ANTHROPOLOGY.

THE PARIS SCHOOL OF ANTHROPOLOGY.

THE program of this school for 1896-7 has been issued. About two hours a day are devoted to lectures. They embrace the following topics:

1. Prehistoric Anthropology: Prof. A. de Mortillet on prehistoric times.
2. Pathological Anthropology: Prof. Capitan on disorders of nutrition in their influence on races, etc.
3. Ethnography and Linguistics: Prof. Lefèvre on the Middle Ages and times.
4. Ethnology: Prof. Hervé on the accessory ethnic elements of France.
5. Biological Anthropology: Prof. Laborde on the senses of sight and hearing in race studies.
6. Zoological Anthropology: Prof. Mahoudeau on heredity and transformation in relation to man.
7. Geographical Anthropology: Prof. Schrader on the relations of earth to man in Asia.
8. Physiological Anthropology: Prof. Manouvrier on the elements of character.
9. Sociology: Prof. Letourneau on certain features in the history of civilization.
10. Comparative Ethnography: Prof. A. de Mortillet on the worship of the dead and burial ceremonies among primitive peoples.

This program will give a good idea of the scope of instruction in this, the oldest school of anthropology. It is now in the twenty-first year of its existence.

AN ARCHÆOLOGICAL MAP OF OHIO.

THE Ohio State Archæological and Historical Society for the past three years has been hard at work upon a large map of the State, which is to show all the prehistoric monuments and sites, according to town-

ships. The work is only about one-third complete and up to the first of November there were 2,100 marks upon the map, representing between 5,500 and 5,600 remains.

Some interesting facts have been brought to light; that the mounds, earthworks, village sites, etc., generally follow the stream, that, in the Sciota valley there are very few stone monuments, but that, in the Muskingum valley, along the Ohio river and in Brush Creek valley (Adams county), stone monuments predominate over those of earth. Seven counties in the State show a total of 918 monuments. Those in the northern and eastern portion average about five or six mounds and village sites each. It does not appear from this that there is a county in the State in which there are less than 15 or 20 ancient remains, but the observations of these counties are only partially complete. Most of the marks were secured by personal visits, the State having been quite thoroughly traveled by students of the Ohio State University and by the Curator, Mr. Moorehead, on bicycles. Several hundred mounds were secured from the report of the Bureau of Ethnology and the Smithsonian Institution.

The number of recorded monuments will reach probably eight thousand. This is a praiseworthy undertaking and it is to be hoped will be carried to completion.

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ASTRONOMICAL NOTES.

IN our issue of October 23d we called attention to Dr. See's announcement of his rediscovery of the companion of Sirius at the Lowell Observatory. Observations of this star were subsequently made at the Lick Observatory. The observations of both observatories disagreed with the published ephemeris of Dr. Auwers, and in our issue of November 20th we called at-

tention to this fact. From a recent letter of Prof. Holden we learn that the Lick observations are certainly correct. This would throw upon the Lowell observations an error of 31° , and upon the ephemeris of Dr. Auwers an error of about 13° . No doubt observations with some of the other large telescopes of this country and Europe will soon be published, and thus any doubts as to the correction required by Dr. Auwers's ephemeris will be set at rest.

PROF. SCHAEFERLE, at the Lick Observatory, has also examined Procyon, with the result of finding that this star also has a visible companion. It was possible to make observations in both positions of the telescope, the means obtained being 319° for the position angle and $4''59$ for the distance. The magnitude of the companion was estimated as 13, and the seeing was unusually fine.

H. J.

NOTES ON INORGANIC CHEMISTRY.

THE discovery of a supposed new element, Lucium, in monazite sand has already been reported in these columns. The discoverer Barrière of Paris has now patented the element! The specifications cover the use of the element alone or in mixtures for incandescent gas lighting, the progress of obtaining the element and the element itself.

THE rotation of polarized light in crystals has heretofore been studied exclusively in natural crystals or in such as have been cut in plates. In the last *Berichte*, Landolt describes an investigation carried out on finely powdered crystals, suspended in a liquid medium of the same refractive power. The object was to see if the rotation remained unchanged, or disappeared when the particles became sufficiently minute. The crystals used were sodium chlorate and the liquid in which they were suspended was a mixture of alcohol and carbon bisulfid. Experiments were made with a powder in which the particles averaged